

IN THE DRAWINGS

The attached sheet of drawings includes changes to Fig. 1. This sheet, which includes Figure 1 is amended to include descriptive text labels as required by the Office Action, replaces the original sheet including Fig. 1.

Attachment: Replacement Sheet

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-11 are pending in the present application. Claims 1-11 are amended by the present amendment.

Amendments to the claims find support in the specification as originally filed, at least at page 9, lines 10-21, and Figs. 1 and 2. Thus, no new matter is added.

In the Office Action, the drawings were objected to; Claims 8-11 were objected to; and Claim 1 was rejected under 35 U.S.C. § 112, first paragraph.

Regarding the objection to the drawings, Figure 1 is amended to include descriptive text labels as required by the Office Action. Thus, it is respectfully requested the drawing objections be withdrawn.

Further, regarding the objections to the claims, Claims 8-11 are amended to correct the informalities noted in the Office Action. Accordingly, it is respectfully requested the objections to the claims also be withdrawn.

Further, in response to the rejection of Claim 1 under 35 U.S.C. § 112, first paragraph, Claim 1 is amended to more clearly recite the claimed features.

Amended Claim 1 is directed to a synchronization circuit for processing an external sequence of analog values which is derived from an input sequence. The synchronization circuit includes, in part, an analog feedback shift register that includes a shift register having memory locations configured to store analog values. The analog values are combined according to a specific feedback pattern to produce a feedback value according to a feedback function. A new input value is generated from the feedback value by superposition with a new element of the external sequence. The new input value is fed to the input of the shift register, and the feedback function is substantially a linear combination of arguments

associated with each of plural sectors. Each of the plural sectors is a portion of an argument space in which the signs of the arguments have predetermined values.

In a non-limiting embodiment, Applicants' Fig. 1 shows an example of a synchronization circuit having a feedback circuit 7 configured to combine, according to a feedback function, analog values in an analog shift register 6 included in an analog feedback shift register 1. Applicants' Fig. 2 shows an example of a feedback function with two arguments, i.e.,  $f(x_1, x_2)$ . In this example, the argument space includes four sectors, and each of the sectors is defined as a portion of the argument space where the signs of the arguments have predetermined values. In the non-limiting example of Fig. 2, the sectors are the portions defined by the signs of the two arguments  $x_1$  and  $x_2$ , that is, a first sector is the portion where  $(x_1 > 0, x_2 > 0)$ , a second sector is the portion where  $(x_1 > 0, x_2 < 0)$ , a third sector is the portion where  $(x_1 < 0, x_2 > 0)$ , and a fourth sector is a portion where  $(x_1 < 0, x_2 < 0)$ . Further, as shown in the example of Fig. 2, in each sector, the feedback function  $f(x_1, x_2)$  is substantially (i.e., apart from smoothing close to the boundaries) a linear combination of  $x_1$  and  $x_2$ . For example, as shown by the surfaces in Fig. 2, the feedback function may be  $f(x_1, x_2) = b_1x_1 + b_2x_2 + c$ , with  $b_1$ ,  $b_2$ , and  $c$  representing real numbers, which may be different in different sectors.

Further, equation (8) defines the feedback function as shown in Fig. 2. In this example, in the first sector,  $b_1 = b_2 = -1/2$ , in the second sector  $b_1 = 1/2$ ,  $b_2 = -1/2$ , in the third sector  $b_1 = -1/2$ ,  $b_2 = 1/2$ , and in the fourth sector  $b_1 = b_2 = 1/2$ . Further, in each of the sectors  $c=0$ . In addition, the invention includes embodiments with greater than two variables based on the claimed features.

Accordingly, Applicants respectfully submit that the specification and drawings clearly depict the claimed subject matter and provide an adequate description with sufficient clarity and conciseness to enable one of skill in the art to make and use the claimed

inventions. Thus, Applicants respectfully request the rejection of Claim 1 under 35 U.S.C. § 112, first paragraph, be withdrawn.

Accordingly, Applicants respectfully submit that independent Claim 1 and claims depending therefrom are allowable.

Consequently, in light of the above discussion and in view of the present amendment, this application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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